

REMARKS/ARGUMENTS

This application now contains claims 1, 2, 9 through 13 and 16. Claims 3 through 8, 14 and 15 have been canceled. All remaining claims have been amended to require that the “organo-molybdenum compound” be a trimeric molybdenum dithiocarbamate compound, as originally claimed in claims 3 and 4.

Claims 1 through 16, all the claims of the application, remain rejected under 35 USC Section 103(a) as being unpatentable over (i) U.S. Patent No. 6,063,741 to Naitoh et al. (hereinafter the “Naitoh et al. ‘741 patent”), in combination with either U.S. Patent No. 6,139,022 to Iwashita et al. (hereinafter the “Iwashita et al. ‘922 patent”) or U.S. Patent No. 6,325,385 to Iwashita et al. (hereinafter the “Iwashita et al. ‘385 patent”). The claims were further rejected under 35 USC Section 103(a) as being unpatentable over U.S. Patent No. 6,444,624 to Walker et al. (hereinafter the “Walker et al. patent”) in view of U.S. Patent No. 6,893,720 to Nakahigashi et al. (hereinafter the “Nakahigashi et al. patent”). The Naitoh et al. patent and Walker et al. patent were individually cited as teaching lubricating oil compositions containing, *inter alia*, molybdenum compounds. Each of the Iwashita et al. ‘922 patent, the Iwashita et al. ‘385 patent and the Nakahigashi et al. patent was cited for teaching objects, such as engine parts, coated with a diamond-like carbon film. It is alleged that, as the Naitoh et al. patent and Walker et al. patent teach that certain lubricants containing molybdenum compounds provide advantages in “engines”, it would obvious to use such compositions to lubricate parts having diamond-like carbon (DLC) coatings because the term “engines” does not exclude engines having DLC coated parts. Applicants respectfully traverse these grounds for rejection.

Applicants filed comments on the above grounds for rejection, and provided certain supporting data in their response dated November 2, 2007, and said comments were reiterated in a response filed July 8, 2008, all of which applicants incorporate into the present response, by reference. In the present Office Action, it is recognized that the data previously submitted demonstrates that, for steel on steel lubrication, “friction modifiers” historically used in lubricating oil compositions all reduced friction, but that with DLC coated surfaces, certain friction modifiers have no significant effect on friction, while molybdenum compounds, particularly trimeric molybdenum dithiocarbamate compounds, do. This result was considered insufficient to address a case of *prima facie* obviousness on the basis that not all friction modifiers would be expected to provide identical friction reducing performance. However, the

data does not demonstrate that there is a difference in the degree of friction modification between the inventive and comparative materials; it demonstrates that the inventive friction modifier providing excellent friction reducing properties with DLC coated surfaces while the comparative material, which one of ordinary skill in the art would expect to have similar effect, was shown not to have any significant friction modifying ability.

The demonstrated results are further considered surprising and unexpected as an established body of research has described the problems associated with the lubrication of DLC coated surfaces, as summarized, for example, in US Patent No. 6,806,242 Shirahama et al. As described therein, it was well known that while DLC coated materials themselves provide lower frictional coefficients than uncoated surfaces in air, they do not display the same advantage in the presence of a lubricant (see Japan Tribology Congress 1999.5, Tokyo, Proceeding Page 11-12, Kano et al.), and the frictional coefficient of DLC coated surfaces cannot be sufficiently lowered in the presence of lubricating oil by using organomolybdenum compounds *per se* (see World Tribology Congress 2001.9, Vienna, Proceeding Page 342, Kano et al.). US Patent No. 6,806,242 further supports the conventional belief that organo-molybdenum compounds are not effective friction modifiers when used in compositions for the lubrication of DLC coated surfaces and teaches that fatty acid, or aliphatic amine friction modifiers are the only suitable friction modifying components under such circumstances. This body of research actually leads away from the present invention as one skilled in the art, knowing that organo-molybdenum compounds, in general, were not effective, would not expect that one specific class of such compounds, trimeric molybdenum dithiocarbamate compounds are extremely effective friction modifiers for use with DLC coated surfaces. In fact, based on this body of research, one skilled in the art would be dissuaded from even testing such compounds.

Applicants submit that the data previously provided demonstrates an unexpected synergy between the trimeric molybdenum dithiocarbamate compound of the claimed lubricant, and the DLC coating of the claimed engine part being lubricated. It is further submitted that this situation is no different from one in which an inventor combines two individually known components and finds that the combination provides an unexpectedly improved result compared to when combinations of what are thought to be substantially similar materials (from a performance standpoint) are employed. It is well settled that a demonstration of unexpected improved results is strong evidence of non-obviousness and, as neither the primary references describing

lubricating oil compositions containing molybdenum compounds, nor the secondary references describing parts coated with DLC surfaces suggest any benefit of the specific combination now claimed. Applicants submit that the improved results shown must be considered surprising and unexpected, particularly when the conventional understanding of one skilled in the art would be that organo-molybdenum compounds, in general, would not function effectively in the lubrication of DLC coated surfaces would, therefore, actually be discouraged from practicing the invention as now claimed. Therefore, applicants believe that the rejections presented under 35 USC Section 103(a) should be withdrawn.

Based upon the foregoing, applicants submit that the invention as claimed is distinguishable over the cited combination of prior art references. Applicants therefore respectfully request that all grounds for rejection presented under 35 USC Section 103(a) be withdrawn and the application now be passed to issue.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Jacob M. Levine".

Jacob M. Levine
Attorney for Applicants
Registration No. 32,509

Infineum, USA, L.P.
Law Technology Department
1900 East Linden Avenue
P.O. Box 710
Linden, NJ 07036
(908) 474-2418